

# SHIVAJI UNIVERSITY, KOLHAPUR



Estd. 1962 NAAC

'A' Grade

**Faculty of Science and Technology**

**Syllabus For**

**B. Arch. Part – II (Sem III & IV)**

**(To be implemented from June 2020 onwards)**

(Subject to the modifications that will be made from time to time)

# **SHIVAJI UNIVERSITY, KOLHAPUR**

## **SYLLABUS FOR THIRD SEM – ARCHITECTURE DEGREE COURSE (PC – 301) SUBJECT: GRAPHICS–III**

Lectures -15	Paper -	Internal - 50
Studio - 45	Duration -	External -
Total -60		Theory -
Total Credit Points-L1 + S1=02		Total - 50

### **COURSE OBJECTIVE**

The study of this subject is continuation of drafting skills, various techniques of presentation with knowledge of perspective. This is continuation and further development of basic course studied during first year.

### **COURSE CONTENTS**

- Introduction of perspective drawings-relatively realistic way for presentation. Principles of one point and two point perspective of simple objects and building elements.
- Perspective of interiors and exteriors using different eye levels .
- Application of softwares such as Sketchup.

### **ASSESSMENT:-**

- Drawings assignment on above topics
- Continuous assessment and marking system should be followed.
- Application of perspective and presentation, both 2d and 3d

### **RECOMMENDED BOOKS:**

- \* Holmes John M. : Applied Perspective
- \* Themes and Hudson: Perspective for the Architect
- \* Friedrich W. Capelle: Professional perspective drawing for Architects and Engineers
- \* G-Sha:- Interior: Perspective in Architectural Design.
- \* Japan Publishing Co: Modern Architectural Rendering best 180
- \* Japan Publishing Co: Perspective Drawings of Modern Architecture
- \* Japan Publishing Co: Air brushing in rendering
- \* Shankar Mulik: Perspective and Sciography
- \* Basic rendering:Robert W.Gill
- \* Rendering with pen + ink: Robert W.Gill

# **SHIVAJI UNIVERSITY, KOLHAPUR**

## **SYLLABUS FOR THIRD SEM – ARCHITECTURE DEGREE COURSE (PE – 302)**

### **SUBJECT:ART APPRECIATION – I**

Lectures - 15	Paper --	Internal - 100
Studio - 15	Duration Hours --	External -
Total - 30		Theory -
Total Credit Points - L1 + S1 = 02		Total - 100

### **COURSE OBJECTIVE**

The Course explores the relationships between architectural discourse and the visual arts from the historical avant-grade to the present. Architectural discourse will be considered as the intersection of diverse system of representation: buildings, projects, drawings, but also architectural theory and criticism, exhibitions, photographs, professional magazines, and the popular press. The course treats as visual arts not only painting and sculpture, but also photography, cinema, fashion, advertisements, and television.

### **COURSE CONTENTS**

The content must stress on three areas:

- \* Intellectual – theoretic, discursive, analytic, critical aesthetics.
- \* Visual – two and three dimensional, black and white & color, DVDs and CDs on art films , films on artists, even feature films known for excellence in the visual art.
- \* Skill – techniques, technology, skill of doing things by hand, traditional crafts etc.

Visits to museums and art galleries, exhibitions.

Create awareness of various types of arts, appreciation and understanding of their relationship with Architecture. Relationship between visual arts and performing Arts.

Assessment:

1. The sessional works shall consists of study of models, photographs.
2. Continuous assessment and marking system should be followed.
3. Documentation of these exercises will be done in A2 size portfolio.

**SHIVAJI UNIVERSITY, KOLHAPUR**  
**SYLLABUS FOR THIRD SEM – ARCHITECTURE DEGREE**  
**COURSE**  
**(PC – 303\*\*)**  
**SUBJECT:ARCHITECTURAL DESIGN-III**

Lectures -15	Paper - -	Internal - 100
Studio - 90	Duration - -	External - 100
Total -105		Theory -
Total Credit Points - L1 + S9 = 10		Total - 200

NOTE:- (\*\*)Means combine passing for internal term work & theory paper & external oral as applicable.

**COURSE OBJECTIVE**

The student will be confronted with progressively complex exercises involving spatial relations in two dimensions, three dimensions and time. Fundamental designs skills are taught in the context of the architect's wider responsibilities to society, culture and the environment. The course will stress experimentation while providing an analytical and creative framework to develop an understanding of principles of design, structure and materials, as well as necessary skills in drawing and model-making.

**COURSE CONTENTS**

Scope of design, considering methods of construction, structure, site conditions, socio-economic factors, form and shapes.

Study of planes, mass, forms and shapes

Study of climatic responsive techniques and its applications

Case study of typical small scale settlement in town or village, for understanding evolution of design, use of material, Built – form characters ,B.T. material and technology and natural /surrounding environment

Data collection and analysis including circulation, zoning ,activity distribution ,circulation and activity relationship ,study of building services.

Design problems of medium complex function, low rise buildings.

Sitevisits :Site visits to complete buildings pertaining to design problems, group discussions among students, special discussions shall also be arranged with senior students, students should also play roles of clients ,contractors and consultants.

Study of groups of objects forms, masses with basic geometric forms, their compositions ,for two and three dimensional study in relation with Basic Design.

#### ASSESSMENT:

Continuous assessment and marking system should be followed

Block models, preliminary models with site development ,human figures with using various model making materials and techniques.

Internal and External exams will be based on above understanding of topics.

#### REFERENCE BOOKS :

1. Time saver standards for building types – latest edition
2. Neufert – Architects data - latest edition
3. Rendering with pen and ink/ Robert W. Gill
4. Ching – FDK architecture form , Van Nostrand Reinhold staff ,New York - latest edition
5. Time saver standards for landscape architecture – latest edition

## **SHIVAJI UNIVERSITY, KOLHAPUR**

### **SYLLABUS FOR THIRD SEM – ARCHITECTURE DEGREE COURSE**

**(BS & AE – 304\*)**

#### **SUBJECT: BUILDING CONSTRUCTION AND MATERIAL-III**

Lectures -15	Paper 80	Internal - 70
Studio - 45	Duration Hours - 3	External - 100
Total - 60		Theory - 80
Total Credit Points - L1 + S2 = 03		Total - 250*

**NOTE:-** (\*) Means combined passing for External oral & Theory paper.

#### **COURSE OBJECTIVE**

This course introduces students to the art and science of building. Emphasis will be placed gaining an understanding of construction materials, methods and the process of translating design ideas into built form. Specific topics are introduced each week. These topics are then further dealt ,various design strategies, materials, fabrication techniques, and didactic built works are explored. As both a qualitative and a basic quantitative understanding of elementary systems are mastered, the curriculum shifts its focus onto increasingly complex systems serving entire buildings. The sequence's last two courses develop an understanding of how technical-utilitarian systems are resolved, integrated with other systems. The material in class requires students to have some experience and understanding of architectural design, drawings and details.

#### **COURSE CONTENTS**

##### **MATERIALS: (Internal Marks 20)**

**Cement:** Ingredients and properties of cement, Types of cement, Grades of cement, Initial and final setting time, Test of cements, ISI Standards, Pozzolana material and its properties.

**Mortar:** Introduction to Mud, Lime and Surkhi Mortar, Cement Mortar-Ingredients, Properties, preparation, mixing and application.

**Concrete:** Cement concrete of different sizes of aggregate, proportion, strength. Concrete preparation, mixing, hoisting and depositing, shuttering and centering, types of reinforcement and its laying.

## **CONSTRUCTION:.(InternalMarks–50)**

**Building structure:** - Framed structure, composite structure, comparison with load bearing structure. Choice between the two.

**Foundation:** Excavation in various types of soil.

Footing, for R.C.C, and masonry columns, isolated footing , combined footing, eccentric footing, strap beam,

Continuous strip footing, steel grill age foundation ( shallow foundations in hard strata)

**SHORING** single flying and double flying shore .

**STAIRCASES:** -Types of stairs. Tread, riser, flight, handrails, straight flight, doglegged, open well, quarter turn, triple flight, ramps, R.C.C. staircase.

**FLOORING:** R.C.C. slabs, One way, Two way cantilever, columns, beam types, details of reinforcement ,Thumb rules and I.S.I standards, form work, etc.

Brick jack arch flooring, filler slab. Ribbed slabs etc

Assessment:

- Drawing sheets and Notes based on the above topic.
- Continuous assessment and marking system should be followed  
Internal and External exams will be based on above understanding of topics.

## **REFERENCE BOOKS**

1. Building Construction by DR B C Punmia / Er . Ashok Kumar Jain /DrArun Kumar Jain
2. Building construction by W B MckayVol -2 & 3
3. Building construction by R.ChudleyVol -1

## SHIVAJI UNIVERSITY, KOLHAPUR

### SYLLABUS FOR THIRD SEM – ARCHITECTURE DEGREE COURSE

(BS & AE – 305\*\*)

SUBJECT:THEORY OF STRUCTURE–III

Lectures - 45	Paper - 80 Marks	Internal - 20
Studio -	Duration Hours - 3	External - --
Total - 45		Theory - 80
Total Credit Points - L3 + S0 = 03		Total - 100**

NOTE:-(\*\*) Means combine passing for internal term work & theory paper & external oral as applicable.

#### **COURSE OBJECTIVES:**

- To Introduce Theory of simple bending & shear stress concept in beams.
- To Understand Deflection of beams.

#### **COURSE CONTENTS :**

**1. Theory of simple bending:-**

Concept of bending stress, Assumptions in theory of simple bending, bending stress formula  $M/I = E/R = F/Y$  (derivation), neutral axis, moment of resistance, examples to cover rectangular, angle, channel, Tee and I sections.

**2. Shear stress in beams:-**

Concept of shear stress, theory of shear stress, distribution of shear stress on rectangular section (derivation), only formulas for other shapes (Circular, I, T) and examples to cover above concepts.

**3. Deflection of beams:-**

Concept of deflection, limits of deflections, deflection by double integration method for simply supported beam with udl on full span, central point load, cantilever with full UDL and point load at free end cases.

**4. Design of simple tension and compression member, use of IS800 and steel table.**

**5. Composite beam( flitched beam)concept, moment of resistance of flitched beams.**

Assignment:

Five assignments to cover above syllabus



**REFERENCEBOOKS:**

1. Strength of materials - S.P. Timoshenko / D.H. Young, R.S. Khurmi
2. Strength of materials - Andrew Pytel, F.L. Singer
3. Strength of materials - S. Ramamurtham
4. Strength of materials - R. Narayan
5. Strength of materials - B.K. Bansal
6. Theory of structure - S. Ramamurtham
7. Design of steel structure- Dr. Ram Chandra - S.K. Duggal
8. I.S. 800
9. Steel Table.

**SHIVAJI UNIVERSITY, KOLHAPUR**  
**SYLLABUS FOR THIRD SEM – ARCHITECTURE DEGREE**  
**COURSE**

(PC – 306\*\*)

**SUBJECT: HISTORY OF ARCHITECTURE – I**

Lectures - 15	Paper - 80 Marks	Internal - 20
Studio - 30	Duration Hours - 3	External - --
Total - 45		Theory - 80
Total Credit Points - L1 + S1 = 02		Total - 100**

NOTE:- (\*\*) Means combine passing for internal Term work & Theory paper & External oral as applicable.

**COURSE OBJECTIVE**

Subject includes the study of various styles in Architecture mainly in Asian countries i.e. India and Indian subcontinent, East Asia and West Asia, through various ages from prehistoric period to colonial period.

The study can actively help in its preservation and evolution in design process.

**COURSE CONTENTS**

It is not only the study of building but also the effect of climate, religious, social and political conditions, technological development, material selection and aesthetical influence on the building design through various periods. It is not only the study of only monumental building but other building types, market places, and city planning etc.

Students will study in detail the History of Architecture of India, and a brief introduction of the History of Architecture in other countries as specified.

**TOPICS**

1. Pre historic Architecture (ancient period) in India and Mesopotamia, India-Vedic culture and Indus Valley civilization, Mesopotamia - Babylonian, Non Babylonian and Assyrian.
2. Detail study of Indian Architecture e.g. Buddhist, and Hindu period.
  - a. Buddhist and Hindu period
    - Architecture during the rule of the Mouryan& Gupta dynasty.
    - Ashoka and beginning of Buddhist period
    - Buddhist Architecture in the Hinayan phase, Rock cut architecture
    - Mahayana phase Buddhist monasteries of Gandhara
    - Buddhist Rock cut Architecture of South India

- Chalukyan Architecture-Aihole, Badami&Pattadkal
- Dravidianstyle(early phase till Madura style)
- North Indian or Indo Aryan style early phase
- North Indian Orissa group
- North Indian Khajuraho group and central Indian group
- North Indian or Indo Aryan style of Gujarat
- The later Chalukyan style or Hoysala group
- The temple cities of Jain and Jain temples.

#### **ASSESSMENT:**

- Continuous assessment and marking system should be followed
- Common Question Bank should be prepared for the paper of this subject which will revise after every three exams of this semester.
- For internal assessment, each topic should be assessed on basis of sketches and tutorials

#### **REFERENCEBOOKS:**

1. Indian Architecture - Buddhist & Hindu period - by Percy Brown
2. History of Architecture - by Sir Banister Fletcher
3. The Architecture of India Buddhist & Hindu period - by Satish Grover The
4. History of Architecture in Indian - by Christopher Tadgell
5. Buddhist stupas in Asia - Forwarded by Robert AF Thurman (Lonely Planet Publication) History
6. of Architecture Ancient building Material - by Satish Chandra
7. The Architecture of Indian Desert, Kulbhushan & Minakshi Jain
8. Architecture of word series (Hindu & Islamic Period) ED Heriri Stietin
9. The great ages of World Architecture - G .K Hiraskar
10. Indian architecture hindu, buddhist, jain&islam- Vedula V.L.N urthy

**SHIVAJI UNIVERSITY, KOLHAPUR**  
**SYLLABUS FOR THIRD SEM – ARCHITECTURE DEGREE**  
**COURSE**  
**(BS&AE – 307)**  
**SUBJECT: CLIMATOLOGY AND ARCHITECTURE**

Lectures - 15	Paper - 100 Marks	Internal - 50
Studio - 30	Duration Hours - 3	External -
Total - 45		Theory - 100
Total Credit Points - L1 + S1 = 02		Total - 150

**COURSE OBJECTIVES:**

To understand climate as a determinant of architectural design and to enable the students to evolve climate responsive design.

**COURSE CONTENTS :**

- The climate factor is one of the basic criteria in architecture design process. The application of knowledge of climate is useful in views of comfort and environment. The study includes climatology pertaining to architectural to planning and energy efficient architecture.
- Introduction to climate as a factor of human shelter, comfort and environment. Elements of climate in different regions at different altitudes and latitudes, macro and micro climate, study of effects of landscape elements and topography on micro climate.
- Study of solar radiation, temperature and their effects on architecture. sun movements, times, shading devices, effects of latitude on sun angles, design of shading devices and study of sciography on horizontal and vertical surfaces with shadow angle. Thermal comfort condition and their relation to overheated and under-heated periods. Relation of relative humidity, thermal comfort.
- Air movement due to natural and built forms, air moment through buildings, use of mechanical ventilation, thermally induced air currents- stack effect, venture effect, use of courtyards
- Effect of humidity in building, effect of large water bodies on humidity reading and preparation of various tables, charts prepared by department of Meteorology, etc. visit to nearest metrological station.
- Climate and design of buildings, design strategies in warm and humid climates, Hot and dry climate, Composite climate and tropical upland climate etc.

**ASSESSMENT:**

- Continuous assessment and marking system should be followed.

- Common Question Bank should be prepared.
- Internal exams will be based on above understanding of topics.

#### **REFERENCE BOOKS:**

1. Manual of Tropical Housing and Building Climatic Design. Author: O.H, Koenigsberger, T.G.Ingersill, Alan Mayhew, S.V.Szokolay.
2. Climate Responsive Architecture A Handbook for Energy Efficient Buildings. Editors: ArvindKrishan, SimosYannas, Nick Baker, S.Y.Szokolay.
3. General Climatology by Howard Critchfield
4. Controlling air movement - A Manual for architects and builders by Terry S. Boutet
5. Wind in architectural and environmental design by Michele G Melarangno
6. Housing climate and comfort by Martin Envas , published by Architectural press London, 1980
7. Bureau of Indian standards IS 3792, Handbook on functional requirements of building other than industrial buildings part I to IV, New Delhi 1987

**SHIVAJI UNIVERSITY, KOLHAPUR**

**SYLLABUS FOR THIRD SEM –  
ARCHITECTURE DEGREE COURSE**

(BS & AE – 308)

**SUBJECT : BUILDING SERVICES – I (SANITATION)**

Lectures - 30	Paper - 50 Marks	Internal - 50
Studio -	Duration Hours - 2	External - --
Total per week - 30		Theory - 50
Total Credit Points - L2 + S0 = 02		Total - 100

**COURSE OBJECTIVE**

Study the concepts of Drainage systems, layouts, different accessories, pipes, chambers, maintenance of systems etc.

**COURSE CONTENTS :**

Design of Drainage system at plot level , Inspection of Site , Locations of fittings. Sanitary

Fittings, classification and types of waste and soil fittings

Working, variations, fitting and connections of different soil and waste fittings, Space requirement and accessories for different fittings, construction of these fittings. Traps of

various types, materials etc

Pipes of various types, fittings and accessories, workmanship, piping systems thru sunk and core cutting

Chambers and manholes of various types, construction, manhole covers.

Connection to central drainage, drops, alternate systems of digestion, Design of septic tanks, various

Materials, vertical SUBO septic tank, two pit toilets, biogas plants on night soil, calculations, construction details, Soak pit construction,

Construction and maintenance of drains, testing of drains, equipments.

One pipe and two pipe systems, ventilation of drains.

Layouts of toilets (attached toilet, public toilets for gents and ladies, ventilation of toilets,

**Assessment:**

- Drawing sheets and Notes based on the above topic.
- Continuous assessment and marking system should be followed Internal assessment will be based on above understanding of topics.

**REFERENCE BOOKS -**

1. National Building Code 2016
2. Sanitation, Drainage and Water Supply-Mitchell.
3. Environment and Services-Peter Burberry
4. Building Construction by Rangwala.
5. Charanjit Shah, Water supply and sanitary engineering, Galgotia publishers.

**SHIVAJI UNIVERSITY, KOLHAPUR**

**SYLLABUS FOR THIRD SEM -**

**ARCHITECTURE DEGREE COURSE**

(BS & AE – 309)

**SUBJECT : ENVIRONMENTAL STUDIES – I**

As a Compulsory Paper for all Undergraduate Courses

Lectures - 30	Paper -	Internal -
Studio -	Duration Hours -	External -
Total per week - 30		Theory -
Total Credit Points - L2 + S0 = 02		Total -

1. **Nature of Environmental Studies:** Definition, scope and importance. Multi disciplinary nature of environmental studies Need for public awareness.

2. **Natural Resources and Associated Problems:**

- a) **Forest resources:** Use and over- exploitation, deforestation, dams and their effects on forests and tribal people.
- b) **Water resources:** Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams- benefits and problems.
- c) **Mineral resources:** Usage and exploitation. Environmental effects of extracting and using mineral resources.
- d) **Food resources:** World food problem, changes caused by agriculture effect of modern agriculture, fertilizer-pesticide problems.
- e) **Energy resources:** Growing energy needs, renewable and non- renewable energy resources, use of alternate energy sources. Solar energy , Biomass energy, Nuclear energy,
- e) **Land resources:** Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

Role of an individuals in conservation of natural resources.

3. **Ecosystems:** Concept of an ecosystem. Structure and function of an ecosystem. Producers, consumers and decomposers. Energy flow in the ecosystem. Ecological succession. Food chains, food webs and ecological pyramids. Introduction, types, characteristics features, structure and function of the following ecosystem :-

- a) Forest ecosystem, b) Grassland ecosystem, c) Desert ecosystem, d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

4. **Biodiversity and its conservation:** Introduction- Definition: genetic, species and ecosystem diversity. Bio-geographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic



and option values. India as a mega- diversity nation. Western Ghats a biodiversity region. Hot-spots of biodiversity. Threats to biodiversity habitat loss, poaching of wildlife, man- wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

References :

- 1) Agarwal, K.C.2001, Environmental Biology, NidiPubi. Ltd.,Bikaner.
- 2) BharuchaErach, The Biodiversity of India, Mapin Publishing pvt.Ltd., Ahmedabad 380013, India, Email:mapin@icenet.net (R)
- 3) Brunner R.C.,1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
- 4) Clank R.S. Marine Pollution, Clanderson Press Oxford(TB)
- 5) Cunningham, W.P. Cooper, T.H.Gorhani, E. & Hepworth,M.T.2001, Environmental Encyclopedia, Jaico Publ. Hpise, Mumbai,1196p
- 6) De A.K., Environmental Chemistry, Wiley WasternLtd.
- 7) Down to Earth , Cebtre fir Scuebce and Environment(R)
- 8) Gleick, H.,1993, Water in crisis, Pacific Institute for studies in Dev., Environment & Security. Stockholm Env. Institute. Oxford Univ. Press 473p
- 9) Hawkins R.e., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay(R)
- 10) Heywood, V.H.& Watson, R.T.1995, Global Biodiversity Assessment, Cmbridge Univ. Press1140p.
- 11) Jadhav, H.&Bhosale, V.M.1995, Environmental Protection and Laws, Himalaya Pub. Hcuse, Delhi284p.
- 12) Mickinney, M.L.& School. R.M.1196, Environmental Science Systems & Solutions, Web enhanced edition,639p.
- 13) Mhaskar A.K., Mastter Hazardous, Techno-Science Publications(TB)
- 14) Miller T.G.Jr., Environmental Science. Wadsworth Publications Co.(TB)
- 15) Odum, E.P.1971, Fundamentals of Ecology, W.B.Saunders Co. USA, 574p.
- 16) Rao M.N.&Datta, A.K.1987, Waste Water Treatment, Oxford & IBH Publ. Co. Pvt. Ltd.,345p
- 17) Sharma B.K., 2001, Environmental Chemistry, Gokel Publ. Hkouse, Meerut
- 18) Survey of the Environment, The Hindu(M)
- 19) Townsend C., Harper, J. and Michael Begon, Essentials of Ecology, Blackwell Science (TB)
- 20) Trivedi R.K. Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, vol. I anfd II, Environmental Media(R)
- 21) Trivedi R.K. and P.K. Gokel, Intriduction to air pollution, Tecgbi-Science Publications(TB)
- 22) Wagner K.D.,1998, Environmental management, W.B. SaundersCo. Philadelphia, USA499p.
- 23) Paryavaranshastra – GholapT.N.
- 24) Paryavaransahastra –Gharapure  
(M)Magazine (R)Reference (TB)Textbook

**SHIVAJI UNIVERSITY, KOLHAPUR**  
**SYLLABUS FOR FOURTH SEM – ARCHITECTURE DEGREE**  
**COURSE**  
**(PC – 401)**  
**SUBJECT: GRAPHICS-IV**

Lectures -15	Paper -	Internal - 100
Studio - 45	Duration -	External -
Total -60		Theory -
Total Credit Points-L1 + S1=02		Total - 100

**COURSE OBJECTIVE**

The study of this subject is continuation of drafting skills, various techniques of presentation with knowledge of perspective. This is continuation and further development of III Sem.

**COURSE CONTENTS**

- Sciography of individual and different geometrical objects representing 2D projections. Application of sciography in 3D projection of geometrical objects.
- 3D sketching – Design oriented.
- Architectural rendering techniques using manual skills.
- Detailed rendering with vehicles, landscaping and people in action.
- Studio work based on design problem. Freehand sketches of design problem in perspective
- Application of software such as Sketchup

**Assignment:-**

Drawings assignment on above topics.

Drawing sciography using Sketchup

**REFERANCE BOOKS:**

1. Holmes John M. : Applied Perspective
2. Themes and Hudson: Perspective for the Architect.
3. Friedrich W. Capelle: Professional perspective drawing for Architects and Engineers
4. G-Shah: Interiors: Perspective in Architectural Design.
5. Japan Publishing Co: Modern Architectural Rendering best 180
6. Japan Publishing Co: Perspective Drawings of Modern Architecture
7. Japan Publishing Co: Air brushing in rendering

8. Shankar Mulik: Perspective and Sciography
9. Basic rendering by Robert W.Gill
10. Rendering with pen+ ink by Robert W.Gill

# **SHIVAJI UNIVERSITY, KOLHAPUR**

## **SYLLABUS FOR FOURTH SEM – ARCHITECTURE DEGREE COURSE**

**(PE – 402)**

### **SUBJECT: ART APPRECIATION –II**

Lectures -15	Paper -	Internal - 100
Studio - 15	Duration -	External - -
Total -30		Theory - -
Total Credit Points-L1 + S1=02		Total - 100

### **COURSE OBJECTIVE**

The course explores the relationships between architectural discourse and the visual arts from the historical avant-garde to the present. Architectural discourse will be considered as the intersection of diverse systems of representation: buildings, projects, drawings, but also architectural theory and criticism, exhibitions, photographs, professional magazines, and the popular press. The course treats as visual arts not only painting and sculpture, but also photography, cinema, fashion, advertisements, and television.

### **COURSE CONTENTS**

The content must stress on three areas.

- Intellectual - theoretic, discursive, analytic, critical aesthetics.
- Visual - two and three dimensional, black and white & colour, DVDs and CDs on art films, films on artists, even feature films known for excellence in the visual.
- Skills - techniques, technology, skills of doing things by hand, traditional crafts etc.

- **History of Fine Arts, study of Isms.**

Students work may be seen to build an “Art Thesis” of sort, after a series of works in studio, workshops, time problems, as well as collective efforts in installations etc. coupled with short theoretical assignments which improve the overall perception of arts. Programs should be both inside studios as well as out in the streets, chowks, bazaars, talavs, and other public spaces, not only for sketching but carrying out installations after studios.

### **Assessment:**

The sessional works shall consist of 3D model and Project report writing and seminars on selected project based on the subject.

## **Reference Books -**

1. Principles Of Element Design;Peter Rich,
2. Yvonne Dean; Butterworth-Heinemann
3. Design Fundamentals In Architecture;V.S.Parmar; Somaiyya Publications
5. Manual Of Rendering With Pen And Ink;Robert W. Gill;Thames And Hudson  
Publication

# **SHIVAJI UNIVERSITY, KOLHAPUR**

## **SYLLABUS FOR FOURTH SEM – ARCHITECTURE DEGREE COURSE (PC – 403\*\*)**

### **SUBJECT:ARCHITECTURALDESIGN-IV**

Lectures -15	Paper - 100	Internal - 100
Studio -90	Duration - 9 Hours	External - 100
Total -105		Theory - 100
Total Credit Points - L1 + S9=10		Total - 300**

NOTE:- (\*\*) Means combine passing for internal term work & theory paper & external oral as applicable

### **COURSE OBJECTIVE**

In continuation with sem. III the student will be confronted with progressively complex exercises involving spatial relations in two dimensions, three dimensions and time. Fundamental Design skills are taught in the context of the architect's wider responsibilities to society, culture and the environment. The course will stress experimentation while providing an analytical and creative framework to develop an understanding of principles of design, structure and materials as well as necessary skills in drawing and model-making.

### **COURSE CONTENTS**

- Scope of Design, considering methods of construction, structure, site conditions, socio-economic factors, form and shapes.
- Study of planes, mass, forms and shapes.
- Case study of typical small scale settlement in town or village, for understanding evolution of design, use of material.
- Data collection and analysis including circulation, understanding movement patterns
- Study of special needs of the people with physical disabilities
- Design problems of medium complex function, low rise buildings.
- Study of building bylaws
- Conduct site analysis to formulate design proposal

- Site visits: Site visits to complete buildings pertaining to design problems, group discussions among students, special discussions shall also be arranged with senior students, students should also play roles of clients, contractors and consultants.
- Study of groups of objects forms, masses with basic geometric forms, their compositions, two and three dimensional study in relation with Basic Design.

**Assessment:**

Continuous assessment and marking system should be followed. Block models, preliminary models with site development, human figures with using various model making materials and techniques. Internal and External exams will be based on above topics.

**REFERENCE BOOK:**

1. Time saver standards for building types – latest edition
2. Neufert – Architects data - latest edition
3. Rendering with pen and ink- Robert W. Gill
4. Ching – FDK architecture form , Van Nostrand Reinhold staff ,New York - latest edition
5. Time saver standards for landscape architecture – latest edition

# SHIVAJI UNIVERSITY, KOLHAPUR

## SYLLABUS FOR FOURTH SEM – ARCHITECTURE DEGREE COURSE (BS & AE – 404\*)

### SUBJECT: BUILDING CONSTRUCTION AND MATERIAL-IV

Lectures -15	Paper - 80	Internal - 70
Studio -45	Duration - 3 Hours	External - 100
Total -60		Theory - 80
Total Credit Points-L1 + S2=03		Total - 250*

NOTE:-(\*) Means combined passing for External oral and Theory paper.

#### **COURSE OBJECTIVE**

This course introduces students to the art and science of building. Emphasis will be placed on gaining an understanding of construction materials, methods and the process of translating design ideas into built form. Specific topics are introduced each week. These topics are then further, various design strategies, materials, fabrication techniques, and didactic built works are explored. As both a qualitative and a basic quantitative understanding of elementary systems are mastered, the curriculum shifts its focus to increasingly complex systems serving entire buildings. This sequence's last two courses develop an understanding of how technical-utilitarian systems are resolved, integrated with other systems. The material in class requires students to have some experience and understanding of architectural design, drawings and details.

#### **COURSE CONTENTS**

The subjects should be dealt with, keeping in mind the fact that construction is a process and understanding the process should be given importance.

#### **MATERIALS: (Internal Marks -20)**

- **Timber:** Building timber types and its properties, Defects in timber, Use and application of timber in construction.
- **Processed woods:** Plywood and Synthetic boards - properties and application. Use of alternative materials as substitute to wood.
- **Flooring:** Natural stones, processed flooring materials - cement based tiles, Ceramic and Vitrified tiles, Wood and rubber based floorings, their properties, application and laying methods.
- **Bitumen and waterproofing Materials:** Asphalt and Bituminous materials - properties and application. Use of admixtures and Chemicals for waterproofing.



Note: Students should be exposed to on-site and Laboratory tests of above materials. Students should conduct market survey of above materials.

### **CONSTRUCTION-(Internal Marks–50)**

**Timber flooring:** Ground and upper floors, types, training of floors joinery details thumb rules, etc.

**Timber roofing:** Trusses, king post and Queen post roof truss, joinery details, roof covering etc.

**Cavity walls:** Types, construction details, advantages and disadvantages

#### **Door and windows:**

T.W. panelled doors and windows, types, ventilators, details of joinery, steel windows for residences and industrial purpose, method of fixing, ISI standard, section, sizes etc. Ironmongery and fixtures of doors, windows, material types and function.

This subject should be dealt with keeping in mind the fact that construction is a process and understanding the process should be given importance.

Site visits should be conducted for better understanding of construction process. The different situations all for different construction method, techniques the methods have certain limitations and advantages.

#### **Assessment:**

Drawing sheets and Notes based on the above topic. Continuous assessment and marking system should be followed.

Internal and External exams will be based on above understanding of topics.

### **REFERENCE BOOKS**

1. Building Construction by DR B C Punmia / Er . Ashok Kumar Jain / Dr Arun Kumar Jain
2. Building construction by W B McKay Vol -2 & 3
3. Building construction by R.Chudley vol -1

# SHIVAJI UNIVERSITY, KOLHAPUR

## SYLLABUS FOR FOURTH SEM – ARCHITECTURE DEGREE COURSE (PC – 405\*\*)

### SUBJECT: THEORY OF STRUCTURE-

Lectures -45	Paper - 80 Marks	Internal - 20
Studio -	Duration - 3 Hours	External - -
Total -45		Theory - 80
Total Credit Points-L3 + S0=03		Total - 100**

#### IV

NOTE:- (\*\*) Means combine passing for internal term work & theory paper & external oral as applicable

#### COURSE OBJECTIVE

1. **Columns and Struts:** Concept of structural behavior of short and long columns,

Determination of buckling load on long column by Euler's formula for both ends hinged and its extension to both end fixed, one end fixed other free, one end fixed and other hinged, support conditions. Limitations of Euler's formula. Rankine's theory, slenderness ratio, effective length, examples to cover above.

2. **Riveted and welded joints:** - Type of riveted joints, failure of joints in riveted connections, strength of riveted joint (problems on single and double riveted lap and butt joint), Types of welded joints, advantages and disadvantages of welded joints, design of welded connection for tension compression members ( simple problems on strength of welded connection).

3. **Design of load bearing** (brick and stone) masonry walls and piers (for buildings only)

4. **Soil mechanics:-**

Importance and applications of soil mechanics, SBC of soil (definition and plate load test), IS table for SBC of various types of soils, sieve analysis, physical properties of soil-soil as a three phase system, specific gravity, porosity, void ratio, water content, degree of saturation. (definitions and concepts and basic examples related on above properties)

5. **Masonry retaining walls** for water and earth pressure (without surcharge), conditions of stability of retaining walls. (Examples on rectangular section and trapezoidal section with retaining

facevertical).

**Assessment:**

Five Assignments to cover above syllabus.

**REFERENCE BOOKS:**

1. Strength of materials – S.P. Timoshenko & D.H. Young, R.S. Khurmi
2. Strength of materials - Andrew Pytel, F.L. Singer
3. Strength of materials - S. Ramamurtam
4. Strength of materials - R. Narayan
5. Strength of materials - B.K. Bansal
6. Theory of structure - S. Ramamurtam
7. Design of steel structure- Dr. Ram Chandra - S.K. Duggal
8. Soil Mechanics – Dr. B.C. Punamia & Jain - Dr. K.R. Arora - B.J. Kasamalkar
9. I. S. 800
10. Steel table

## SHIVAJI UNIVERSITY, KOLHAPUR

**SYLLABUS FOR FOURTH SEM – ARCHITECTURE DEGREE  
COURSE  
(BS&AE – 406)  
SUBJECT: SURVEYING AND LEVELING**

Lectures -15	Paper -	Internal - 50
Studio/Practical - 30	Duration -	External - 50
Total -45		Theory - -
Total Credit Points-L1 + S1=02		Total- 100

### **COURSE OBJECTIVE**

1. Introduction of survey: aims, objects & importance of subject.
2. Introduction to land records survey, index map, top sheets.
3. Chain survey, triangulation & instruments for ranging, offsetting.
4. Calculation of area by method of triangles, Simpson's rule, by planimeter, digital planimeter.
5. Introduction to prismatic compass & its uses. (theoretical importance)
6. Introduction to plane table survey (instruments & methods)
7. Leveling instruments & methods to calculate levels, concept of contours & its uses, its characteristics & introduction to theodolite.
8. Uses of photogrammetric surveying & concept of GPS.
9. Introduction to advanced instruments like digital planimeter, digital theodolite, automatic level, radiation survey method, environmental survey instruments, digital distance meter, etc
10. Line out of simple residential building plan

### **FIELD BOOK:-**

- 1) Recording of chain survey
- 2) Application of prismatic compass

- 3) Sign conventions for various objects (symbols)
- 4) Area measurement by planimeter
- 5) Leveling instruments
- 6) Application of theodolite.

**DRAWING SHEETS:-**

- 1) Close traversing of building by compass
- 2) Planimeter
- 3) Block contouring
- 4) Plain table survey sheets

**REFERENCE BOOKS:**

1. Surveying ( Vol.1&2) -----Dr.Punmia and Jain
2. Surveying and Levelling----N.N.Basak
3. Advance Surveying-----P.som&B.N.Ghosh
4. Surveying and Levelling (Part-1)----T.P.Kanetkar&S.V.Kulkarni

## **SHIVAJI UNIVERSITY, KOLHAPUR**

### **SYLLABUS FOR FOURTH SEM – ARCHITECTURE DEGREE**

#### **COURSE SUBJECT:**

**(PC – 407\*\*)**

#### **HISTORY OF ARCHITECTURE - II**

Lectures -15	Paper - 80	Internal - 20
Studio - 30	Duration - 3 Hours	External - -
Total - 45		Theory - 80
Total Credit Points-L1 + S1=02		Total - 100**

NOTE:- (\*\*) Means combine passing for internal Term work & Theory paper & External oral as applicable.

#### **COURSE OBJECTIVE**

Subject includes the study of various styles in Architecture mainly in Asian countries i.e. India and Indian subcontinent, East Asia and West Asia, through various ages from prehistoric period to colonial period. The study can actively help in its preservation and evolution in design process.

#### **COURSE CONTENTS**

It is not only the study of building but also the effect of climate, religious, social and political conditions, technological development, material selection and aesthetical influence on the building design through various periods. It is not only the study of only monumental building but other building types, market places, and city planning etc.

Students will study in detail the History of Architecture of India, and a brief introduction of the History of Architecture in other countries as specified.

#### **Topics:**

1) Study of Indian Islamic Architecture.

- Delhi Provincial style under Slave, Khilaji, Tughalaq & Lodhi dynasty Punjab provincial style
- Bengal and Jaunapur provincial style, Malwa and Gujarat provincial style
- Deccan provincial style - Gulbarga, Bidar & Golconda Bijapur provincial style
- Mughal period under Babar & Humayun Mughal period under Akbar

- Mughal period under Jahangir and Shahajhan Mughal period under Aurangzeb and after
- 2) Brief introduction to the colonial Architecture in Indian sub continent.e.g.India, Pakistan, Sri Lanka and Bangladesh
  - 3) Brief Introduction to the Architecture in China .
  - 4) Brief Introduction to the Architecture in Japan

**Assessment:**

- Continuous assessment and marking system should be followed
- Common Question Bank should be prepared for the paper of this subject which will revise after every three exams of this semester.
- For internal assessment, each topic should be assessed on basis of sketches and tutorials

**REFRANCE BOOKS -**

1. Indian Architecture - Islamic Period - by Percy Brown
2. The Architecture of India Islamic period - by Satish Grover
3. Architecture of Pakistan - Kamil Khan Mumtaz
4. FatepurSikri - Marg Publication
5. The sultanate Architecture - Marg Publication
6. Indian Architecture Hindu, Buddhist ,Jain & Islam - Vedula V L N Murthy

## **SHIVAJI UNIVERSITY, KOLHAPUR**

### **SYLLABUS FOR FOURTH SEM – ARCHITECTURE DEGREE COURSE (BS&AE – 408)**

**SUBJECT : BUILDING SERVICES – II (WATER SUPPLY & ELECT.)**

Lectures -30	Paper - 50	Internal - 50
Studio -	Duration - 2 Hours	External - -
Total -30		Theory - 50
Total Credit Points-L 2+ S0=02		Total - 100

#### **COURSE OBJECTIVE**

Study of different water sources ,supply sources

#### **COURSE CONTENTS**

##### **Water supply**

- Per capita quality and quantity of water supply, sources of water supply at plot level, Municipal water supply system, wells, deep well, shallow well, bore well, rooftop rainwater harvesting, recycling of water.
- Metering of water supply, connection to municipal main, water supply layout inside plot, sump and underground water storage tank, construction in various materials, connections, advantages and disadvantages of various types of tanks, Pump,
- Over head water storage tank, design, construction in different materials, variousconnections.
- Pipes of different types, materials, fittings, workmanship. Valves, taps.
- Layout of water supply inside toilets.
- Hot water supply, domestic water heaters of various types, hot water piping, materials, insulation to pipes, layout of hot water piping.

##### **Electricity**



- Generation of electricity, clean and green energy concepts, Small Generators, stand by
- systems and inverters, UPS etc
- Ampere, volts, A. C, D. C supply, three phase, Single phase etc, Supply of electricity to plot, sub
- station, H T panel and L T panel, Underground and overhead cabling, metering of
- Electricity. Electric supply at plot level.
- Bus Bar; Meter board, earthing, Distribution board, fuse, MCB ULCB etc, switch boards,
- switches, socket etc, wiring systems, wires and cables, lamps and luminaries, fans, domestic
- appliances, layout of electricity in a flat, residence

**Assessment:**

Drawing sheets and Notes based on the above topic.

Continuous assessment and marking system should be followed

Internal assessment will be based on above understanding of topics.

**REFERENCE BOOKS**

1. Plumbing Engineering by Dr.SubhashPatil
2. Mechanical and Electrical Equipment for Buildings by Walter T. Grondzik, Alison G. Kwok, Benjamin Stein
3. International Plumbing Code by Indian Code Council
4. Building Construction Illustrated by Dr. F.D.K Ching
5. Building Construction by Sushil Kumar
6. Building Construction by B.C Punmia
7. Building Construction by Rangwala
8. Building Construction by P.C Varghese

## SHIVAJI UNIVERSITY, KOLHAPUR

### SYLLABUS FOR FOURTH SEM – ARCHITECTURE DEGREE COURSE

(BS&AE – 409)

#### SUBJECT:ENVIRONMENTAL STUDIES - II

Lectures -02	Paper - 70	Internal - 30
Studio - -	Duration - 3 Hours	External - --
Total - 02		Theory - 70
Total Credit Points-L2 + S0=02		Total - 100

As per the common syllabus provided by the Shivaji University, Kolhapur.

**1. EnvironmentalPollution:**

Definition: Causes, effects and control measures of: Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards.

Solid waste Management: Causes, effects and control measures of urban and industrial wastes.

Role of a individual in prevention of pollution.

**2. Social Issues and theEnvironment:**

Disastermanagement:floods,earthquake,cyclone,tsunamiandlandslides Urban problems related toenergy. Water conservation, rain water harvesting, watershed management. Resettlement and rehabilitation of people; its problems and concerns. Environmental ethics: Issue and possible solutions.Global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust.Wasteland reclamation. Consumerism and waste products.

**3. EnvironmentalProtection:**

From Unsustainable to Sustainable development.Environmental Protection Act.Air (Prevention and Control of Pollution) Act.Water (Prevention and control of Pollution) Act.Wildlife Protection Act.  
Forest Conservation Act.

Population Growth and Human Health, Human Rights.

4. **FieldWork:**

Visit to a local area to document environmental assets- River/forest/grassland/hill/mountain.

or

Visit to a local polluted site –

Urban/Rural/Industrial/Agricultural or

Study of common plants,

insects,birds.

or

Study of simple ecosystems - ponds, river, hill

slopes, etc. (Field work is equal to 10 lecture hours)

**References :**

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- 3) Brunner R.C.,1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
- 4) Clank R.S. Marine Pollution, Clanderson Press Oxford(TB)
- 5) Cunningham, W.P. Cooper, T.H.Gorhani, E. & Hepworth,M.T.2001, Environmental Encyclopedia, Jaico Publ. Hpise, Mumbai,1196p
- 6) Environmental Chemistry, Wiley EasternLtd.
- 7) Down to Earth , Cebtre fir Scuebbe and Environment(R)
- 8) Gleick, H.,1993, Water in crisis, Pacific Institute for studies in Dev., Environment & Security. Stockholm Env. Institute. Oxford Univ. Press 473p
- 9) Hawkins R.e., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay(R)
- 10) Heywood, V.H.& Watson, R.T.1995, Global Biodiversity Assessment, Cambridge Univ. Press1140p.
- 11) Jadhav, H.&Bhosale, V.M.1995, Environmental Protection and Laws, Himalaya Pub. Hcuse, Delhi284p.
- 12) Mickinney, M.L.& School. R.M.1196, Environmental Science Systems & Solutions, Web enhanced edition,639p.
- 13) Mhaskar A.K., Mastter Hazardous, Techno-Science Publications(TB)
- 14) Miller T.G.Jr., Environmental Science. Wadsworth Publications Co.(TB)
- 15) Odum, E.P.1971, Fundamentals of Ecology, W.B.Saunders Co. USA, 574p.
- 16) Rao M.N.&Datta, A.K.1987, Waste Water Treatment, Oxford & IBH Publ. Co. Pvt. Ltd.,345p
- 17) Sharma B.K., 2001, Environmental Chemistry, Gokel Publ. Hkouse, Meerut
- 18) Survey of the Environment, The Hindu(M)

- 19) Townsend C., Harper, J. and Michael Begon, Essentials of Ecology, Blackwell Science (TB)
- 20) Trivedi R.K. Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, vol. I and II, Environmental Media(R)
- 21) Trivedi R.K. and P.K. Gokel, Introduction to air pollution, Tecgbi-Science Publications(TB)
- 22) Wagner K.D.,1998, Environmental management, W.B. SaundersCo. Philadelphia, USA499p.
- 23) Paryavaranshastra – GholapT.N.
- 24) Paryavaranshastra –Gharapure  
(M)Magazine      (R)Reference      (TB)Textbook

Equivalence of subjects for **SECOND YEAR B. ARCH.**

**Semester - III**

Subject as per syllabus of 2010-11		Equivalence of subjects as per syllabus of CBCS Pattern 2019 -2020 onwards	
Subject code	Name of Subject	Subject code	Name of Subject
AR03- 01	Graphics - III	PC - 301	Graphics – III
AR03- 02	Art Appreciation - I	PE – 302	Elective – I
AR03- 03	Architectural Design - III	PC – 303	Architectural Design – III
AR03- 04	Building Construction & Material - III	BS & AE – 304	Building Construction & Material – III
AR03- 05	Theory of Structure - III	BS & AE – 305	Theory of Structure – III
AR03- 06	History of Architecture - I	PC - 306	History of Architecture
AR03- 07	Climatology & Architecture	BS & AE – 307	Climatology & Architecture
AR03- 08	Building Services - I (Sanitation)	BS & AE – 308	Building Services – I
AR03- 09	Computer Technology & Architectural Presentation -I	PC - 301	Graphics – III
AR03- 10	Environmental Studies	BS & AE – 309	Environmental Studies

**Semester - IV**

Subject as per syllabus of 2010-11		Equivalence of subjects as per syllabus of CBCS Pattern 2019 -2020 onwards	
Subject code	Name of Subject	Subject code	Name of Subject
AR04- 01	Graphics - IV	PC – 401	Graphics – IV
AR04- 02	Art Appreciation - II	PE – 402	Elective – II
AR04- 03	Architectural Design - IV	PC – 403	Architectural Design – IV
AR04- 04	Building Construction & Material - IV	BS & AE – 404	Building Construction & Material – IV
AR04- 05	Theory of Structure - IV	BS & AE – 405	Theory of Structure – IV
AR04- 06	Surveying & Leveling	BS & AE – 406	Surveying & Leveling
AR04- 07	History of Architecture - II	PC – 407	History of Architecture
AR04- 08	Building Services - II (Water Supply & Elect.)	BS & AE – 408	Building Services – II
AR04- 09	Computer Technology & Architectural Presentation-II	PC – 401	Graphics – IV
AR04- 10	Environmental Studies	BS & AE – 409	Environmental Studies